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gypsum product. For example, a slurry distributor can be used to distribute an aqueous calcined gypsum slurry upon an advancing web.

In one embodiment, a method of distributing an aqueous calcined gypsum slurry upon a moving web can be performed using a slurry distributor constructed according to principles of the present disclosure. A first flow of aqueous calcined gypsum slurry and a second flow of aqueous calcined gypsum slurry are respectively passed through a first feed inlet and a second feed inlet of the slurry distributor. The first and second flows of aqueous calcined gypsum slurry are combined in the slurry distributor. The first and second flows of aqueous calcined gypsum slurry are discharged from a distribution outlet of the slurry distributor upon the moving web.

Further and alternative aspects and features of the disclosed principles will be appreciated from the following detailed description and the accompanying drawings. As will be appreciated, the slurry distribution systems disclosed herein are capable of being carried out and used in other and different embodiments, and capable of being modified in various respects. Accordingly, it is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only and do not restrict the scope of the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an embodiment of a slurry distributor in accordance with principles of the present disclosure.

FIG. 2 is a top plan view of the slurry distributor of FIG. 1.

FIG. 3 is a front elevational view of the slurry distributor of FIG. 1.

FIG. 4 is a left side elevational view of the slurry distributor of FIG. 1.

FIG. 5 is a perspective view of the slurry distributor of FIG. 1 with a profiling system removed therefrom.

FIG. 6 is a schematic plan diagram of an embodiment of a gypsum slurry mixing and dispensing assembly including a slurry distributor in accordance with principles of the present disclosure.

FIG. 7 is a schematic plan diagram of another embodiment of a gypsum slurry mixing and dispensing assembly including a slurry distributor in accordance with principles of the present disclosure.

FIG. 8 is a schematic elevational diagram of an embodiment of a wet end of a gypsum wallboard manufacturing line in accordance with principles of the present disclosure.

FIG. 9 is a perspective view of another embodiment of a slurry distributor in accordance with principles of the present disclosure.

FIG. 10 is a perspective view of an embodiment of a slurry distributor support and the slurry distributor of FIG. 9 housed therein.

FIG. 11 is a perspective view of another embodiment of a slurry distributor in accordance with principles of the present disclosure.

FIG. 12 is another perspective view of the slurry distributor of FIG. 11.

FIG. 13 is a perspective view of another embodiment of a slurry distributor in accordance with principles of the present disclosure.

FIG. 14 is a top plan view of the slurry distributor of FIG. 13.

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FIG. 15 is a rear elevational view of the slurry distributor of FIG. 13.

FIG. 16 is a top plan view of a bottom piece of the slurry distributor of FIG. 13.

FIG. 17 is a perspective view of the bottom piece of FIG. 16.

FIG. 18 is a fragmentary, perspective view of the interior geometry of the slurry distributor of FIG. 13.

FIG. 19 is another fragmentary, perspective view of the interior geometry of the slurry distributor of FIG. 13.

FIG. 20 is a schematic plan diagram of another embodiment of a gypsum slurry mixing and dispensing assembly including a slurry distributor in accordance with principles of the present disclosure.

FIG. 21 is a perspective view of an embodiment of a flow splitter suitable for use in a gypsum slurry mixing and dispensing assembly including a slurry distributor in accordance with principles of the present disclosure.

FIG. 22 is a side elevational view, in section, of the flow splitter of FIG. 21.

FIG. 23 is a side elevational view of the flow splitter of FIG. 21 with an embodiment of a squeezing apparatus mounted thereto.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

The present disclosure provides various embodiments of a slurry distribution system that can be used in the manufacture of products, including cementitious products such as gypsum wallboard, for example. Embodiments of a slurry distributor constructed in accordance with principles of the present disclosure can be used in a manufacturing process to effectively distribute a multi-phase slurry, such as one containing air and liquid phases, such as found in an aqueous foamed gypsum slurry, for example.

Embodiments of a distribution system constructed in accordance with principles of the present disclosure can be used to distribute a slurry (e.g., an aqueous calcined gypsum slurry) onto an advancing web (e.g., paper or mat) moving on a conveyor during a continuous board (e.g., wallboard) manufacturing process. In one aspect, a slurry distribution system constructed in accordance with principles of the present disclosure can be used in a conventional gypsum drywall manufacturing process as, or part of, a discharge conduit attached to a mixer adapted to agitate calcined gypsum and water to form an aqueous calcined gypsum slurry.

Embodiments of a slurry distribution system constructed in accordance with principles of the present disclosure are aimed at accomplishing wider distribution (along the cross-machine direction) of a uniform gypsum slurry. A slurry distribution system of the present disclosure is suitable for use with a gypsum slurry having a range of WSRs, including WSRs conventionally used to manufacture gypsum wallboard and those that are relatively lower and have a relatively higher viscosity. Furthermore, a gypsum slurry distribution system of the present disclosure can be used to help control air-liquid slurry phase separation, such as, in aqueous foamed gypsum slurry, including foamed gypsum slurry having a very high foam volume. The spreading of the aqueous calcined gypsum slurry over the advancing web can be controlled by routing and distributing the slurry using a distribution system as shown and described herein.

Embodiments of a method of preparing a gypsum product in accordance with principles of the present disclosure can include distributing an aqueous calcined gypsum slurry upon